IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent Application of

SKOGERBØ — Atty. Ref.: 2810-43

Serial No. 10/565,436 — TC/A.U.: 3671

Filed: January 20, 2006 — Examiner: Beach

For: ANTI-COLLISION SYSTEM

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May 22, 2009

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

Applicants submit herewith their Brief on Appeal pursuant to 37 CFR §41.37.

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(I) REAL PARTY IN INTEREST

The real party in interest is the assignee, AKER KVÆRNER MH AS, a corporation of Norway.

(II) RELATED APPEALS AND INTERFERENCES

On information and belief there are no other prior or pending appeals, interferences, or judicial proceedings (past or present), known to appellant, the appellant's legal representative, or assignee, which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

(III) STATUS OF CLAIMS

Claims 1-2, 4-8 and 10-14 remain pending. Claims 3 and 9 have been canceled. Claims 1-2, 4-8 and 10-14 have been rejected. The Examiner's November 17, 2008 Final Rejection of claims 1-14 (now pending as claims 1-2, 4-8 and 10-14) is being appealed. A current listing of the claims that are the subject of this Appeal is presented in the Claims Appendix of this Brief.

(IV) STATUS OF AMENDMENTS

An Amendment and Request for Reconsideration under Rule 116 was filed on February 13, 2009, in response to the Examiner's Final Rejection of November 17, 2008.

On March 2, 2009, the Examiner issued an Advisory Action. The Advisory Action indicated that the Amendment of February 13, 2009 will be entered for purposes of Appeal. With a Notice of Appeal having been filed on March 26, 2009 and with the filing of this Appeal Brief, it is understood that the February 13, 2009 Amendment has now been entered.

(V) SUMMARY OF CLAIMED SUBJECT MATTER

The present invention provides a system for controlling the movements of objects in an automated system comprised of independent transporting means for moving a number of objects relative to each other, as well as a method for avoiding collisions between the objects. (Page 1, lines 3-6 as numbered).

The inventors recognized that in an automated or remote controlled system comprising a number of objects moving partially independent of each other, there is always a danger of collisions between the objects. (Page 1, lines 7-9).

Thus, it was an object of the invention to provide a system that allows several objects to move within an automated system without risking collisions or accidents, providing an increased efficiency to the system when compared with previously known systems. (Page 2, lines 1-4).

This object is obtained by providing a simple and effective system that does not demand large calculation powers in operating a system, as it keeps track of geometrical objects being related to controllable position data for each object in the system, e.g., having simplified shapes which may give an extra tolerance in the stored position data and which are easy to visualize on a computer screen. In addition, a tolerance is provided around the objects and routines are established for relating a set of rules for the relative movements of the objects. (Page 2, lines 6-12).

Thus, and even more specifically, as defined in independent claim 1, the invention provides a system for controlling the movements of objects in an automated or remote operated system comprising independent transporting means 13,15,18,23, 25,27 for moving a number of objects 12 relative to each other (page 2, lines 27-31 and page 3, lines 10-15 and 20-25), the system being providing with means for

controlling the position and velocity of the objects relative to each other (page 3, lines 1-5, 7-10 and 14-15), wherein each object is related to an imaginary three-dimensional object 1,2,3 having a defined geometric shape having dimensions corresponding to or exceeding the physical dimensions of the respective object in all directions (page 3, lines 18-20 and 26-29; page 4, lines 13-14 and 25-26), each transporting means is related to a stop distance X2, X4 needed for the respective transporting means to come to a complete stop (page 4, lines 3-9 and 15-18), and a critical allowed distance X2+X5+X4 is defined between the defined geometric shapes (page 4, lines 20-21, and 29), whereby collisions between objects can be avoided by changing at least one of a speed or direction of movement of at least one of said transporting means when a distance between defined geometric shapes moving on a common axis corresponds to said critical allowed distance, (page 4, lines 13-24 and 25-32), wherein said critical distance is dependent on the relative movement between the respective objects. (Figures 3-4, page 4, lines 15-21 and 27-32; page 5, lines 19-22).

Also, as defined in claim 7, the only other independent claim, the invention provides a method for avoiding collisions between automatically controlled or remote operated objects having variable positions and movements relative to each other said positions and movements being controlled by a control system (page 2, lines 27-31; page 3, lines 10-15 and 20-25), comprising: assigning a geometric shape 1,2,3 to each object 12,13,15,18,23,25,27, said geometric shape corresponding to or exceeding the dimensions of the corresponding object, the geometric shape thus occupying a space corresponding to or exceeding the space occupied by the object, (page 3, lines 18-20 and 26-29; and page 4, lines 13-14 and 25-26), assigning a stop distance X2, X4 to each object, said stop distance being a distance needed for the respective object to come to a complete stop (page 4, lines 3-9 and 15-18), defining a critical minimum distance X2+X5+X4 between said geometrical shapes (page 4, lines 20-21 and 29), and when a distance between defined geometric shapes moving on a common axis

corresponds to said critical minimum distance (X3=X5), changing at least one of a speed or direction of movement of at least one of said corresponding objects (page 4, lines 13-24 and 25-32), whereby collisions between objects can be avoided, wherein said critical distance is dependent on the relative movement between the respective objects. (Figures 3-4; page 4, lines 15-21 and 27-32; page 5, lines 19-22).

(VI) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-12 (now claims 1-2, 4-8 and 10-12) stand rejected under 35 USC §102(e) as being anticipated by Lamb.

Claims 13-14 stand rejected under 35 USC §103(a) as being unpatentable over Lamb in view of Krueger.

(VII) ARGUMENT

Claims 1-2, 4-8 and 10-12 are patentable as not having been anticipated by Lamb.

Claims 1 and 7 were amended by the February 13, 2009 Amendment, entered upon filing of this Appeal, to incorporate, respectively, the limitations of previously presented claims 3 and 9.

Thus, the independent claims now specifically provide that the critical distance is dependent on the relative movement between the respective objects and, thus, the relative movement between the objects is used in controlling their movements.

Anticipation under Section 102 of the Patent Act requires that a prior art reference disclose every claim element of the claimed invention. See, e.g., Orthokinetics, Inc. v. Safety Travel Chairs, Inc., 806 F.2d 1565, 1574 (Fed. Cir. 1986). While other references may be used to interpret an allegedly anticipating reference, anticipation must be found in a single reference. See, e.g., Studiengesellschaft Kohle, m.b.H. v. Dart Indus., Inc., 726 F.2d 724, 726-27 (Fed. Cir. 1984). The absence of any element of the claim from the cited reference negates anticipation. See, e.g., Structural Rubber Prods. Co. v. Park Rubber Co., 749 F.2d 707, 715 (Fed. Cir. 1984). Anticipation is not shown even if the differences between the claims and the prior art reference are insubstantial and the missing elements could be supplied by the knowledge of one skilled in the art. See, e.g., Structural Rubber Prods., 749 F.2d at 716-17.

The cited reference to Lamb, insofar as can be determined, teaches a system that continually detects only the absolute position (location of the envelopes) of each object and stops both involved objects when an intersection between object envelopes is detected (column 5, lines 25-30). Further in this regard, the passages bridging

columns 5 and 6 of Lamb explain that an intersection of Zone 1 rectangles provides only a warning function whereas an intersection of Zone 2 and/or Zone 3 both result in disabling travel and slew of both machines. Thus, as explained in column 5, lines 42-61, Lamb simply repeatedly compares collision envelopes to detect and determine overlap of the envelopes, and responds to such overlap in the manner described in the paragraphs bridging columns 5 and 6. Accordingly, it is clear that no consideration whatsoever is given to the relative movement of the objects, only their absolute position. In contrast to the teachings of Lamb, because the critical allowed/minimum distance that triggers a change in speed and/or direction is dependent upon the relative movement between the respective objects, the present invention may have such an effect that it allows two objects to continue moving in the same direction, e.g., as long as the second object slows down relative to the first.

In this regard, it is noted that the critical distance as recited in Applicant's claims is the distance at which at least one of the speed or direction of movement of at least one of the transporting means is changed. The critical distance in the example of Applicant's Figure 3 is X2+X5+X4, i.e., when X3=X5. Both X2 and X4 are dynamic and dependent on the relative direction of movement and speed (because they are related to stopping distance and are zero if the object is stationary) of the transporting means.

The Examiner's Advisory Action asserted that Applicant is arguing that "critical distance" is dependent on the "speed" between objects, but this is not recited in the rejected claims. Firstly, it is respectfully noted that although the Examiner has focused on the term "speed", "relative movement" is clearly what the Amendment and arguments focused upon whereas "speed" was mentioned only once in the prior response. In any event, the claims clearly provide, and Applicant argued, that the critical distance is dependent on the relative movement of the objects.

In contrast to the invention specifically defined in Applicant's claim 1, Lamb does not disclose nor in any way teach or suggest defining a critical allowed distance between the defined geometric shapes that is dependent on *inter alia*, relative movement between the respective objects. Likewise, with regard to Applicant's claim 7, Lamb does not disclose nor in any way teach or suggest defining a critical minimum distance between the geometric shapes that is dependent on the relative movement between the respective objects. On the contrary, as noted above, Lamb simply repeatedly compares collision envelopes to detect and determine overlap of the envelopes and responds to such overlap with a warning or by disabling travel. Thus, there is no consideration given to relative movement and no teaching of defining a critical minimum distance dependent on relative movement.

For all the reasons advanced above, it is clear that the invention defined in Applicant's claims 1 and 7 are not anticipated by Lamb.

For the same reasons, the claims that depend from claims 1 and 7 are not anticipated by Lamb.

Claims 13 and 14 are patentable as not having been obvious from Lamb in view of Kruger.

These claims are submitted to be patentable over Lamb for the reasons advanced above. Even if Lamb were used on an offshore installation for handling pipes in drilling operations, the operation of Lamb would still not correspond to the system and method defined in Applicant's claims 1 and 7. It is therefore respectfully submitted that claims 13 and 14 are allowable at least for the reasons advanced above with respect to claims 1 and 7.

CONCLUSION

For all the reasons advanced above, reversal of the Examiner's rejections and allowance of all pending claims is solicited.

Respectfully submitted,

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(VIII) CLAIMS APPENDIX

1. (Previously Presented) System for controlling the movements of objects in an automated or remote operated system comprising independent transporting means for moving a number of objects relative to each other, the system being providing with means for controlling the position and velocity of the objects relative to each other, wherein each object is related to an imaginary three-dimensional object having a defined geometric shape having dimensions corresponding to or exceeding the physical dimensions of the respective object in all directions, each transporting means is related to a stop distance needed for the respective transporting means to come to a complete stop, and a critical allowed distance is defined between the defined geometric shapes, whereby collisions between objects can be avoided by changing at least one of a speed or direction of movement of at least one of said transporting means when a distance between defined geometric shapes moving on a common axis corresponds to said critical allowed distance,

wherein said critical distance is dependent on the relative movement between the respective objects.

2. (Previously Presented) System according to claim 1, wherein the dimensions of the geometric shape corresponds to the size of the respective object.

Claim 3. (Cancelled).

4. (Previously Presented) System according to claim 1, wherein the critical distance between two geometric shapes moving toward each other corresponds to the stop distance for each corresponding transporting means plus a chosen additional distance.

5. (Original) System according to claim 1, wherein the objects and corresponding geometric shapes are adapted to be rotatable.

6. (Original) System according to claim 1, wherein the geometric shape is rectangular.

7. (Previously Presented) Method for avoiding collisions between automatically controlled or remote operated objects having variable positions and movements relative to each other said positions and movements being controlled by a control system, comprising:

assigning a geometric shape to each object, said geometric shape corresponding to or exceeding the dimensions of the corresponding object, the geometric shape thus occupying a space corresponding to or exceeding the space occupied by the object,

assigning a stop distance to each object, said stop distance being a distance needed for the respective object to come to a complete stop,

defining a critical minimum distance between said geometrical shapes, and

when a distance between defined geometric shapes moving on a common axis corresponds to said critical minimum distance, changing at least one of a speed or direction of movement of at least one of said corresponding objects, whereby collisions between objects can be avoided,

wherein said critical distance is dependent on the relative movement between the respective objects.

8. (Previously Presented) Method according to claim 7, wherein the dimensions of the geometric shape corresponds to the size of the respective object.

Claim 9. (Cancelled).

10. (Original) Method according to claim 7, wherein the critical distance between two geometric shapes moving toward each other corresponds to the braking distance for each corresponding object plus a chosen additional distance.

11. (Original) Method according to claim 7, wherein the objects and corresponding geometric shapes are adapted to be rotatable.

12. (Original) Method according to claim 7, wherein the geometric shape is rectangular.

13. (Previously Presented) System according to claim 1 adapted for use on offshore installations, especially for handling pipes in drilling operations, wherein said objects correspond to means for storing, moving and/or installing equipment in offshore installations.

14. (Previously Presented) System according to claim 13, wherein the installation is a drill rig and the system is adapted for storing, moving and installing pipes on said drill rig.

(IX) EVIDENCE APPENDIX

(NONE)

(X) RELATED PROCEEDINGS APPENDIX

(NONE)